

## Wool production from pasture - biological and economic limits within Western Victoria

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The extent to which pasture growth rate, date of flowering and dead pasture digestibility limit wool production and financial returns were estimated for perennial ryegrass/sub clover pastures in western Victoria. This was done using a simulation model of a pasture-sheep production system previously tested at the Pastoral Research Institute, Hamilton, and on local farms (1).

Our model uses 52 values (GPN) representing maximum weekly pasture growth rates. Actual growth rates are determined by reducing potential values if moisture or temperature are limiting, or if pasture availability is low or approaching ceiling yield.

The model examined the effects of introducing a new pasture species or cultivar which would increase maximum growth rate values by 25% for part or all of the year. Results at 8 and 10 ewes/ha are shown in Table 1. Increasing pasture growth rate after week 35 was of much less value. Economic returns were lower at 6 and 12 ewes/ha. At 6 ewes/ha there were insufficient animals to utilize the additional pasture. At 12 ewes/ha the stocking rate was excessive, with high requirements for supplementary feeding a major financial drain.

**Table 1. Mean percentage increase in wool production and gross margin/ha and net farm income following a 25% increase in maximum pasture growth rates (GPN) for selected weeks. Simulation from 1965 to 1984, August lambing.**

Weeks in which GPN increased		Clean wool (kg/ha)	Gross margin (\$/ha)	Mean Net Farm Income (\$)
None: (actual values)	8/ha	27.7	95.2	20,211
	10/ha	32.8	81.5	17,659
			<u>Percent Change</u>	
1 - 52	8/ha	1.8	3.9	3.6
	10/ha	4.6	26.5	30.7
18 - 29	8/ha	1.1	2.2	2.0
	10/ha	1.8	12.0	14.8
24 - 35	8/ha	0.7	1.9	1.6
	10/ha	1.5	10.4	12.8

Delaying the maturation of the pasture species by delaying the onset of flowering by 2 weeks increased mean net farm income by 3.5 and 4.0% at 8 and 10 ewes/ha respectively. There therefore seems substantial scope for moving to later flowering cultivars.

Increasing dead pasture digestibility by 10% increased wool yield/ha at both 8 and 10 ewes/ha by around 1%, with increases of about 8% for GM/ha and mean net farm income. Therefore, at around 8 ewes/ha, it would be better to improve forage digestibility than forage availability. With concurrent increase in stocking rate, increasing forage yield rather than forage quality would be more advantageous.

1. White, D.H. and Bowman, P.J. (1986). Proc.Aust.Soc.Anim.Prod. 16: 58-60.